

## ***Firecast: A Near-Real-Time Monitoring System Improving Forest Management in the Tropics***

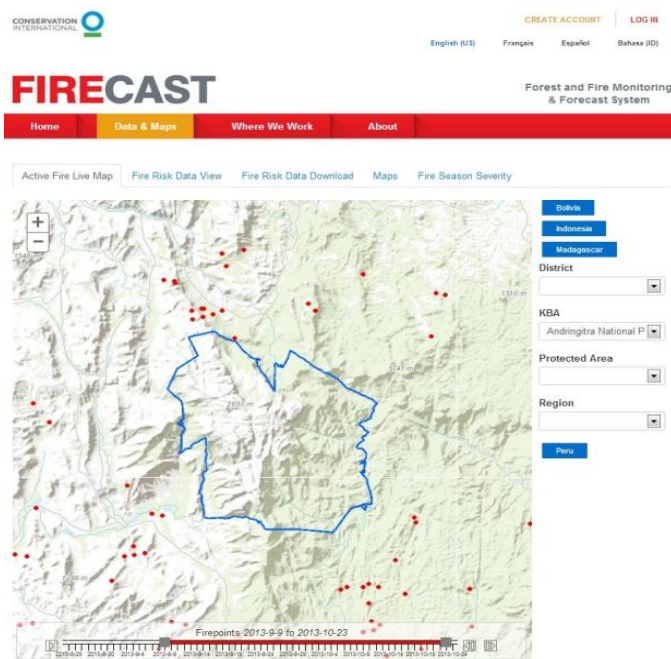
The loss of the world's natural habitat through timber extraction, wildland fires, and agricultural expansion is causing wide-ranging environmental and economic impacts.

Projected increases in frequency and intensity of drought conditions will increase the incidence of wildland fires. Drought and fire cause economic strain, displacement, and food insecurity while also impacting biodiversity and the provision of ecosystem services such as water availability, water quality, and pollination. In addition, fire disasters cause health problems from poor air quality and spread of disease.

Firecast is a tool designed to help prevent the destructive effects of fires on natural habitats and human well-being. Firecast uses emerging technologies and cutting-edge research to empower local stakeholders with timely monitoring and forecasting information. The system delivers short-term, fire-risk forecasting and near-real-time (NRT) detection of fires, droughts, and deforestation to subscribers through email alerts, maps, and reports.



*Conservation International works directly with in-country partners and decision-makers to understand the challenges users face managing fire risk and fire incidence. The system currently operates in Bolivia, Peru, Madagascar, and Indonesia.*



*CI's automated forest monitoring system detects "deforestation in-action," disseminating daily email alerts of fire activity observed by NASA satellites. Users can tailor their alert subscriptions to specific areas of interest, language of choice, and download monthly reports and maps documenting historic forest fire activity.*



*Firecast delivers daily forest flammability alerts that are used by partner, Fundación Amigos de la Naturaleza (FAN), in Bolivia to warn farming communities of dangerous fire conditions.*

# Discovering and Demonstrating Innovative and Practical Applications of Earth Observations

## Fire Risk Forecasting

The forest flammability model uses satellite-based estimates of weather conditions derived from the MODerate Resolution Imaging Spectroradiometer (MODIS) and Tropical Rainfall Measuring Mission (TRMM) to generate a daily risk indicator for forested areas in the Amazon region.

## Fire Season Severity Forecasting

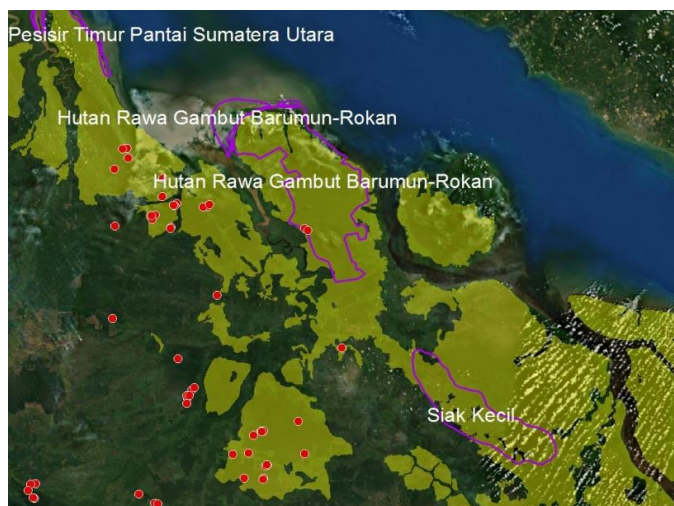
These forecasts monitor Sea Surface Temperatures (SSTs) in the North Atlantic and Pacific and forecast the expected intensity of fire activity several months before the fire season. Knowing potential fire season severity in advance is extremely useful for fire management and prevention, protected area management, and sustainable land use planning.



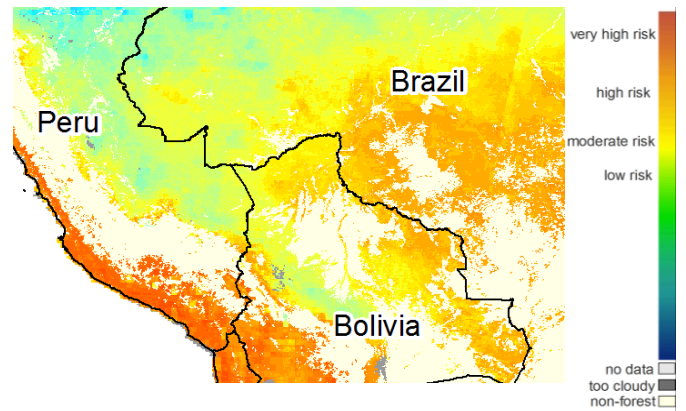
*Fire season severity for the 2013 dry season for Santa Cruz, Bolivia. The model forecasted considerably higher fire activity compared to the 2011 and 2012 dry seasons.*

## Active Fire Alerts

Firecasts delivers daily MODIS active fire alerts to subscribers who use the data for active fire control, policing of illegal forest activities, fining landowners, land use planning, Reduced Emissions from Deforestation and forest Degradation (REDD+) monitoring, and community outreach and education.



*Fires in Indonesia August 6, 2013 (shown in red). Firecast allows users to select highly customized criteria for alerts that include Key Biodiversity Areas (outlined in purple) and peat lands (in yellow-green).*



*Daily risk of forest flammability for the Amazon region. Elevated risk of fire due to drought conditions (shown in orange and red in this map).*

## Phase II Activities

Upcoming additions to Firecast's suite of NRT products include: VIIRS active fire alerts, QUICC 5km and 250m disturbance alerts, MODIS-derived burned area product, and Landsat-derived deforestation. Firecast will expand geographically to include Colombia and the forest flammability model will be enhanced and improved in partnership with FAN. Outreach and engagement will continue with current and potential new users through training, workshops, communications, and publications.

## Anticipated Impacts

Firecast is a critical tool for improved fire and forest management and avoided emissions. Through phase II system enhancements and in-country engagement, Firecast can be used to:

- effectively monitor and protect millions of hectares of high-biodiversity habitat
- prevent fire spread from prescribed burning in farming communities in Santa Cruz, Bolivia
- prevent of more than 100 million tons of CO<sub>2</sub> emissions through conservation and sustainable management of tropical forest and peat landscapes in Indonesia
- build capacity on Monitoring, Reporting and Verification in Peru and Colombia
- help to create markets for sustainably-sourced products and supply chain efforts globally.

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